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**DEVELOPMENT OF MEASURES
TO PROMOTE SUSTAINABLE
CONSUMPTION AND
PRODUCTION IN
THE AGRICULTURAL
SECTOR IN THAILAND**

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POPULATION (AND
CONCERNED GOVERNMENT
AGENCIES) TOWARD MIGRANT
WORKERS IN THAILAND
IN THE CONTEXT OF PUBLIC
HEALTH, ECONOMIC IMPACT
AND NATIONAL SECURITY**



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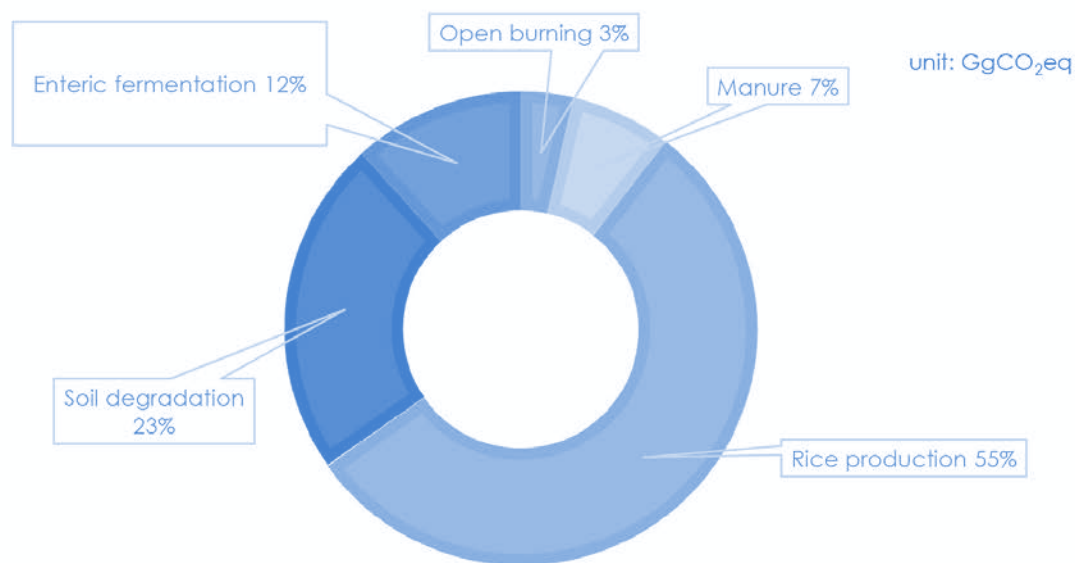


DEVELOPMENT OF MEASURES TO PROMOTE SUSTAINABLE CONSUMPTION AND PRODUCTION IN THE AGRICULTURAL SECTOR IN THAILAND

*Kannika Thampanishvong
Natthaporn Butpho
Yanaluck Wongjinda**

**Dr. Kannika Thampanishvong is Research Fellow, Ms. Natthaporn Butpho and Ms. Yanaluck Wongjinda are Researchers, Green Development and Climate Policy, Thailand Development Research Institute.*

Figure: Greenhouse gas emissions from agricultural activities, 2013



Source: Second Biennial Update Report, 2013.

1. BACKGROUND

In the past, the Thai economy long used to rely on the agricultural sector as the main engine of economic growth. This sector was domestically known as the country's backbone as it was generating food, employment, and living incomes for the majority of Thai people. On the world stage, Thailand's agricultural sector also played a prominent role as it contributed to a steady increase in harvests and improved food security globally. Nevertheless, the rapid growth in agricultural production patterns has given rise to a number of serious environmental challenges. First, the agricultural sector has had a major impact on the use of natural resources, which often leads to their overexploitation and degradation; for instance, loss of forest areas, water and air pollution, loss of biodiversity, and increased greenhouse gas (GHG) emissions, particularly carbon dioxide (CO₂), methane and nitrous oxide. The release of GHGs

by the agricultural sector is a result of deforestation, burning of agricultural wastes, and excessive use of sources of non-renewable energy. In addition, the process of intensive agricultural production also produces significant adverse environmental impacts, such as topsoil depletion, contamination of groundwater, and lowered working conditions for farmworkers.

According to the Second Biennial Update Report prepared in 2013 by the Office of Natural Resources and Environmental Policy and Planning, total emissions of GHGs in Thailand reached 318,662 gigagrams of carbon dioxide equivalent (GgCO₂eq). The energy sector was the major emitter, with GHG emissions of 236,936 GgCO₂eq, which accounted for 74 percent of total emissions in Thailand. The GHG emissions in the agricultural sector, the industrial sector, and waste sector were 50,919 GgCO₂eq (16%), 18,977 GgCO₂eq (6%), and 11,830 GgCO₂eq

(4%), respectively. Several agricultural activities, including the burning of agricultural residues, enteric fermentation, soil degradation, animal manure, and rice production (Figure), contribute toward increased GHG emissions.

The Figure shows the amount of GHG emitted by different agricultural activities in 2013. According to this figure, rice cultivation contributed the largest part (about 55%) of GHG emissions in the agricultural sector, followed by soil degradation (about 23%), enteric fermentation (about 12%), livestock manure (7%) and open burning of agricultural residues (about 3%), respectively.

Given that the agricultural sector is among the major contributors to global warming, this sector has high potential to mitigate the effects of GHG emissions through the integration of the sustainable consumption and production principle into strategies and policies. Although there are diverse definitions of sustainable production in agriculture, the key concept is to meet society's food needs in the present without compromising the ability of future generations to meet their own needs. The backbone of sustainable agricultural production involves the integration of three main objectives, namely a healthy environment, economic profitability, and social and economic equity.

The objectives of this study are threefold. First, it is aimed at reviewing existing and potential mitigation strategies in the context of the Thai agricultural sector. Second, under this study, measures and instruments are proposed to facilitate adoption of sustainable consumption and production in Thailand. Third, this study is aimed at reviewing the mitigation strategies in the agricultural sector that have high potential.

2. METHODS

This research study used a combination of both primary and secondary data in the analysis.

First, the authors reviewed the existing literature on the promotion of sustainable consumption and production in the agricultural sector as well as studies that investigated mitigation strategies in the agricultural sector. In addition, they conducted in-depth interviews with specialists and representatives from public and private organizations to obtain better understanding of the current situation, pain points, and measures that could help address these problems. The research team then used the information from the literature review and in-depth interviews to develop measures to promote sustainable consumption and production in the agricultural sector. Subsequently, the research team conducted focus group discussions with farmers in two study areas, namely Mae Chaem district in Chiang Mai Province and Nanoi district in Nan Province. At the end of the process, the research team synthesized all the information and developed recommendations on strategies to reduce GHG emissions in the agricultural sector and measures to encourage sustainable consumption and production.

3. RESULTS

3.1 Potential mitigation strategies in the agricultural sector

This study highlights six strategies to mitigate GHG emissions in the agricultural sector, namely (a) no burning of agricultural residues, (b) soil carbon sequestration, (c) alternate wetting and drying, (d) enteric fermentation, (e) production of biogas from manure, and (f) production of biomass and biofuel from agricultural residues.

First, to prevent open burning of agricultural residues, several approaches can be explored, such as stubble plowing, using agricultural residues to generate energy, recycling of agricultural residues and building strong associations between major agricultural organizations and farmers. Second, to support soil carbon sequestration, farmers are encouraged to grow vetiver grass to rehabilitate

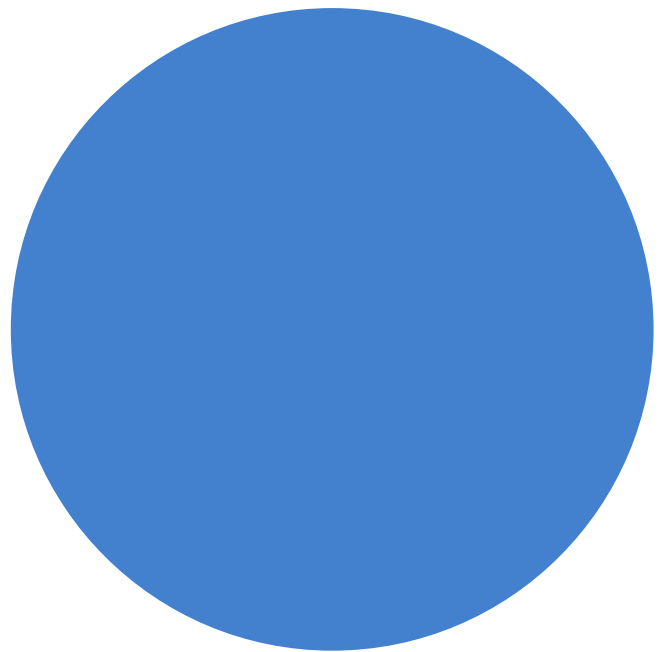
degraded soils and refrain from hazardous activities which would lead to soil degradation.

The alternate wetting and drying (AWD) system is a water management technique practiced to cultivate irrigated lowland rice with much less water than the usual system of maintaining continuous standing water or ponds in crop fields. Farmers can apply AWD technique to reduce their irrigation water consumption in rice fields without decreasing yields. In AWD, irrigation water is applied a few days after the disappearance of the ponded water. Hence, the field is alternately flooded and non-flooded. The number of days of non-flooding between irrigation episodes can vary from 1 to more than 10 days depending on a number of factors, such as soil type, weather, and crop growth stage. In addition to saving water, the AWD technique can also help reduce the amount of methane emitted from rice fields.

In 2013, enteric fermentation contributed about 12 percent of the total GHG emissions in Thailand. To reduce the amount of methane emissions from the enteric fermentation process, the Department of Livestock Development has explored alternative livestock feed, with an increase in the starchy concentrate and more digestible forage, supplementing probiotics, as well as using organic compounds.

The other strategy to reduce emission of GHGs from livestock production is to use animal manure in the production of biogas. Conversion of animal manure into biogas through anaerobic digestion processes can provide added value to manure as an energy resource and reduce environmental problems associated with animal wastes, such as odor, GHG emissions and insect pests. Therefore, the production and use of biogas is normally perceived as a clean and sustainable energy-generation option that can guarantee significant GHG savings.

Agricultural residues are highly important sources of biomass fuels for both the domestic



and industrial sectors.¹ Availability of primary residues² for energy application is usually low because collection is difficult, and such residues have other uses as fertilizer, animal feed etc. However, secondary residues³ are usually available in relatively large quantities at the processing site and may be used as a captive energy source for the same processing plant, thereby involving minimal transportation and handling costs.

Rice produces both straw and rice husks at processing plants, both of which residues can be conveniently and easily converted into energy. Significant quantities of biomass remain in fields in the form of cobs when maize is harvested; this biomass can be converted into energy. Sugarcane harvesting leads to harvest residues in fields, while further processing produces fibrous bagasse, both of

¹ Source: <https://www.bioenergyconsult.com/agricultural-residues/>

² Examples of primary residues include paddy straw, sugarcane tops, maize stalks, empty coconut bunches and fronds, palm oil fronds and bunches.

³ Examples of secondary residues include paddy husks, bagasse, maize cobs, coconut shells, coconut husks, coir dust, sawdust, palm oil shells, fiber and empty bunches, wastewater, and black liquor.



which residues are good sources of energy. All these materials can be converted into useful energy by using a wide range of technologies, which can serve as an alternative to open burning of agricultural residues.

3.2 Measures to support sustainable consumption and production in the agricultural sector

The purpose of this section is to develop measures to support sustainable consumption and production throughout the value chain in the agricultural sector, starting from utilization of natural resources and inputs, production and processing operations, distribution and logistics, marketing and consumption. Details of measures to promote sustainable consumption and production at each node of the value chain are as follows.

3.2.1 Utilization of natural resources and inputs

To prevent farmers from encroaching on forests to practice monoculture involving intensive use of chemicals, proper implementation of a forest-based economy with site-specific solutions should be conducted, which would allow farmers to produce agricultural products under forest cover

but without the use of agricultural chemicals. Moreover, a traceability system should be adopted to assure consumers that the agricultural products were produced from appropriate sources. To keep farmers from undertaking agricultural production in areas highly susceptible to soil erosion, legal measures should be adopted and enforced, banning farmers from growing crops in such areas along with encouraging soil and water conservation techniques. To promote more efficient use of water in agricultural production, economic instruments, such as imposing charges on irrigated water, should be considered to encourage farmers to economize on water usage. As many parts of Thailand are currently facing problems due to the aging of farm labor, the proposed measures include educating and training elderly farmers on new agricultural technologies which would help them save on the use of farm labor. Given that making the transition toward sustainable agriculture often entails high upfront costs and investment, helpful measures should be introduced, such as suspension of debt repayment and provision of green credit to farmers at concessional rates.

3.2.2 Production process

Two main issues need to be addressed when it comes to the agricultural production process. The first is land preparation using open burning of vegetation and crop residues. This practice generates a substantial amount of air pollution. To address this issue, farmers should be educated and trained on how to use agricultural residues to produce energy, such as biomass or biofuels. Moreover, farmers should receive additional funding or receive support in terms of machinery to help them during the land preparation process. The second issue is related to the intensive use of hazardous agricultural chemicals, particularly herbicides and pesticides. In many European countries, pesticide taxes have been introduced to discourage the use of pesticides in crop production. For Thailand, this study proposes that taxes should be levied on hazardous agricultural chemicals. However, prior to the introduction of such a measure, research and development on the natural alternatives to hazardous agricultural chemicals should be promoted. It is very important that these natural alternatives do not compromise yields, and are affordable and accessible by all farmers.

3.2.3 Processing

A number of challenges arise during the processing of agricultural products. The first challenge is the lack of continuity in the supply of sustainable agricultural produce comprising inputs into processing operations. One way to get around this problem is to source raw materials from multiple sources in order to diversify risks and ensure continuity of supply. The second challenge to be addressed is the lack of processing standards which control the use of chemical additives during processing, as well as the prevention of contamination.

3.2.4 Distribution and logistics

Given that sustainable agricultural products

are often produced in remote rural areas, while the demand for these products is largely concentrated in large cities, the concept of “cold chain management” should be considered in order to preserve the freshness of the agricultural products during the transportation process.

3.2.5 Marketing

In terms of marketing, this study proposes that local markets for sustainable agricultural products should be established and promoted so that retail prices for these products can become more affordable for the consumers. To enhance consumer confidence, a traceability system should be put into place to control and track the supply chain of agricultural products from end to end. Doing so would expand the market for sustainable agricultural products.

3.2.6 Consumption

To encourage more widespread consumption of sustainable agricultural products, the concept of “food literacy” should be promoted through social campaigns both among young children and the general public. In addition, the labelling of sustainable agricultural products should be encouraged to provide consumers with more product information.

3.3 Priority measures

Given that there are a large number of measures to support sustainable consumption and production in the agricultural sector proposed in this study, six specific measures are highlighted below.

- 1. Land tenure measures:** Encourage transition of farmers toward sustainable crop production that does not involve forest encroachment or excessive use of chemicals. This may involve further amendment of laws regarding provision of land tenure in forest areas.



2. **Temporary suspension of debt repayment:** Initial transition toward sustainable agricultural practices often demands high levels of working capital and large upfront costs connected with the use of new agricultural technology, machinery, seeds and other inputs. In this regard, a temporary suspension of debt repayment should be introduced to improve the liquidity situation for farmers during the transition process.
3. **Soft loans:** Loans with a below-market rate of interest (or soft loans) should be offered to farmers who are committed to adopt sustainable agricultural practices.
4. **Taxing hazardous agrochemicals:** Taxes on hazardous agrochemicals should be levied to encourage alternative use of environmentally friendly biological substances. However, more research and development on alternative substances will need to be prioritized to ensure that their effectiveness is not compromised.
5. **Establishing food standards:** The establishment of food standards and certification schemes can help boost consumer confidence in the safety and quality of sustainable agricultural products.
6. **Increase distribution channels:** Given that the general public still has only limited access to sustainable agricultural products, large wholesale markets could help source sustainable agricultural produce from diverse farmer groups, as well as provide a one-stop shopping service for retailers and end consumers.

4. CONCLUSION

Expansion of Thailand's agricultural sector involves a number of environmental impacts, such as loss of biodiversity, soil degradation, and increases

in GHG emissions. Many agricultural activities contribute toward such emissions, for example rice production, enteric fermentation, open burning, and animal manure. This study reviewed mitigation strategies and measures to support sustainable consumption and production in the agricultural sector.

In the context of Thailand, this study highlights six mitigation strategies, namely soil carbon sequestration, no burning of agricultural residues, the alternate wetting and drying system, enteric fermentation, production of biogas from animal manure, and use of biomass and biofuel produced from agricultural residues. These mitigation strategies have been recently implemented by both the public and the private sectors.

The present research puts forward crucial measures that would facilitate transition to sustainable consumption and production (SCP) in the agricultural sector. The first measure puts emphasis on transition toward sustainable crop production that does not involve forest encroachment. The second measure is focused on granting suspension on debt repayment for farmers who adopt sustainable farming practices. Third, green credit at concessional rates could be offered to farmers who commit to adopt sustainable agricultural practices. Fourth, research and development of natural alternatives to agricultural chemicals should be encouraged; this should be done prior to the introduction of taxes on hazardous agricultural chemicals. Fifth, to expand markets or distribution channels for farmers who adopt SCP practices, local markets should be established to help save on transportation costs and make retail prices of these agricultural products more affordable. Sixth, a food standard and certification scheme should be encouraged.





ATTITUDE OF THE NATIVE POPULATION (AND CONCERNED GOVERNMENT AGENCIES) TOWARD MIGRANT WORKERS IN THAILAND IN THE CONTEXT OF PUBLIC HEALTH, ECONOMIC IMPACT AND NATIONAL SECURITY*

The Health Systems Research Institute (HSRI) is committed to developing guidelines for the management and improvement of the healthcare system for migrant workers in Thailand, by relying on knowledge and empirical data as the basis for development. The Thailand Development Research Institute (TDRI) has received research grants from HSRI to conduct research on the attitudes of Thais toward migrant workers in the areas of in public health in Thailand as well as its economic and security aspects.

** This article has been taken from the executive summary of the research synthesis on the attitudes of the native Thai population (and concerned government agencies) toward migrant workers in Thailand in the context of public health, economic impact and national security. The research project was funded by the Health Systems Research Institute (HSRI). Dr. Yongyuth Chalamwong is project leader. The project report was submitted to HSRI in September 2018.*

This research report is aimed at studying and synthesizing government policies and regulations on the attitudes of Thais (including the government) toward migrant workers in the aforementioned dimensions of public health, economics and national security. The research also studies the linkage of Thai (and government) attitudes toward management policies related to migrant workers.

The study concludes that Thai attitudes toward migrant workers are diverse, both positive and negative, depending on which group of Thais is involved, such as locals, Thai workers, Thai officers, Thai employers, and so on, and their interactions. The policy for managing migrants was established under the concept of maintaining national security, which calls for very strictly regulating policies for migrants. In addition, the concept of maintaining the country's security is influenced by economic and public health dimensions.

Public health dimension

In terms of public health, Thais have good attitudes toward giving migrants access to healthcare services, providing them with knowledge about hygiene. In terms of healthcare service personnel, it was found that they are willing to provide medical care for migrant workers at the same treatment standards as for Thai people. However, there are still questions about what should be the justified health benefit package furnished to migrant workers. Should it offer the same coverage as for Thai people? For example, should it provide protection for such functions as childbirth? There are two reasons for these questions about a suitable benefit package: (a) there are some benefits to which Thai people have no access, but migrants have; and (b) the government budget has to be managed. Furthermore, there are migrant workers who have access to health services, but refuse to pay for medical bills, and send incorrect information about free services at specific hospitals

to their friends, causing imitation behaviors (i.e. payment refusal), which results in a negative attitude toward migrants.

Epidemics and transmission of diseases from migrant workers are other reflections of recent research. In the past, local healthcare personnel thought that migrants were responsible for the occurrence of various communicable diseases in Thailand, such as elephantiasis and tuberculosis. However, a subgroup discussion pointed out that the situation had changed recently. Healthcare personnel and Thai people have a better attitude toward migrants and understand that communicable diseases may not be caused by migrant workers; Thais can also be the source of an epidemic. In addition, public and healthcare sectors have tried to solve, prevent and control diseases among migrants.

Sanitation and environmental issues are also linked to national culture, and reflect differences. When migrants come into Thailand, some of their behaviors, such as chewing betel (Burmese culture), appear to be unsanitary, increasing negative views of Thais toward migrants. In the case of the household environment, some Thais who live in the same community reflect negative attitudes due to the poor housing conditions in which migrants are living. However, there are non-governmental organizations (NGOs) that are trying to help educate migrants about shelter cleanliness. They are also trying to create a platform for communication in communities shared by Thais and migrant workers so that they will better understand each other.

The positive attitude of Thais with regard to coexistence and participation with migrant workers in a community is reflected in the opportunities for participating in activities they attend together. By doing activities together with migrants, Thai people become more aware of the migrants' way of life. Understanding each other's background leads to better attitudes; at the same time, migrant workers can also adjust to living in Thai society.



Economic dimension

In respect of economic dimension, most employers and Thai workers show an overall positive attitude toward migrants, especially regarding employment aspects. Due to the economic situation and labor market in Thailand, the country has experienced a shortage of workers. It is necessary in some industries to employ migrant workers to replace Thai workers, such as in the manufacturing, construction and fishery sectors. Thus, employers have a positive attitude and emphasize the employment of migrant workers. For example, in some factories, if migrant workers can communicate in Thai, employers provide them with a higher position vis-à-vis other migrant workers, which is a matter of great pride for them. Moreover, there are organizations that focus on improving migrants' skills.

With regard to local workers, both positive and negative attitudes exist toward migrant workers in the workplace. Some Thais think that migrants are replacing Thais doing a dirty/heavy jobs that Thais are not willing to do anymore, such as in the fishing and construction industries. In addition, some factories play a distinct role between Thai and migrant workers, resulting in both groups working and living together without problems. However, some Thai workers still show negative attitudes about migrant workers because they think that migrants come from less developed nations; therefore, they think that Thai workers should be given a better position in the workplace than migrant workers.

Another important issue is the substitution of Thai workers. As previously mentioned, most migrant workers can replace Thai workers in occupations in which Thai people do not want to work. Some migrants potentially could work as entrepreneurs, but the law prohibits them from competing with Thais in doing so. Some Thai



entrepreneurs have voiced feelings about being threatened by this potential. In the past, Thais did not believe that migrant workers would take over Thai people's jobs, say, as street vendors, but nowadays some Thai people feel negatively about this issue and believe that migrant workers will do so.

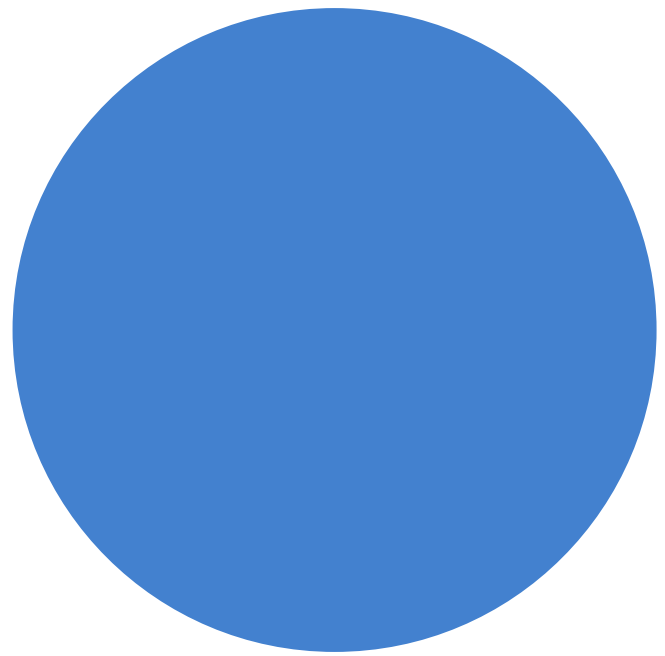
National security aspect

The attitudes of Thai people with regard to national security are represented in negative forms due to paranoia about abusive migrants, their gambling behaviors, drug problems, illegal activities, crime issues and even whether they are illegally working in a Thai community. These issues are perceived to have an impact on the safety of life and property within the country.

Migrant workers who come to Thailand illegally are the biggest issue in the national security dimension. Data indicate that illegal migrants are related to the problem of human trafficking. This issue was conveyed through the media to the Thai public in a negative way. Thus, Thai people unintentionally understand that most migrant workers create problems for Thai society rather than creating benefits. Such a perception leads to inappropriate attitudes and behaviors toward migrant workers.

However, some information points to another side of the national security aspect in that some Thais also have a positive attitude toward migrant workers. This is due to joint activities between the migrants and the Thai community. Thais become aware of the information received and start to observe the lives of migrants more closely. This makes the attitudes and behavior of Thai people overall change in a positive way, including the management of migrant workers by the government so that they can come to Thailand and work legally, which increases confidence among Thai people.

This study also points out the important



determinants of attitudes of Thai people toward migrant workers in appropriate forms of communication. To create a contextual understanding of each dimension involves coexistence of Thais with migrants. This issue is important to all parties because it will lead to situational awareness, which is very useful for policy-making. In addition, the creation of a platform for Thais and migrant workers to participate together will create a major turning point in the perception and understanding of migrants' lives, leading to changes in attitude, and a better attitude from Thais toward migrant workers.

Finally, a set of recommendations is proposed below for research and for policy; these are aimed at improving the management of migrant workers in Thailand.

RECOMMENDATIONS FOR RESEARCH

This study is useful not only to academia but also to the country and the general public. To produce applicable research that supports the government or policy-makers, the following research topics are recommended.

1. Assess access to healthcare benefits for migrant workers, not only those with a legal work permit but also illegal workers, workers who travel across the border every day for work, and their relatives who might come along. Consider how the migrants access healthcare, what kind of healthcare, and how various groups of migrant's access and benefit from healthcare differently.
2. Investigate the possible establishment of a healthcare scheme and benefits package suitable for migrant workers, taking into consideration the economic cost and returns to the health facility and the government.
3. Assess the willingness of Thai employers and migrant workers to pay for both health and social insurance and how to design a more appropriate insurance scheme.
4. Investigate the lifestyle and symbiosis of Thais and migrant workers and how to promote cooperation between groups by using the community-based participatory research (CBPR) approach.
5. Evaluate the economic benefits to be gained from employing migrant workers, by occupation, and their contribution to the national income.
6. Determine whether policies and regulations concerning migrant workers are effective, whether there are loopholes in the law, and how to amend them in order to efficiently manage migrant workers.
7. Propose how to manage migrant workers by balancing concerns from political, economic, and humanitarian points of view.
8. Investigate methods for communicating the results of research on migrant workers to the public, especially university students.

RECOMMENDATIONS FOR POLICY

The government, as policy-maker, plays an active role in managing migrant workers and promoting national security. The following policies for the government are recommended.

1. The government should reduce obstacles in the procedures for employing migrant workers and the application process for obtaining work permits, for instance eliminating unnecessary steps, reducing waiting time, and updating or abolishing unnecessary laws.
2. The government should communicate to the public more information about the topic of migrant workers by, for example, providing reliable information on migrant workers or explaining why migrant workers are crucial to the economy.
3. In solving migrant-related problems, pointing out that the government is not imperative and does not have the necessary resources, the government should rely on the private sector and NGOs, while limiting itself to taking a supporting role.
4. The government should promote research on policy-relevant topics and the use of empirical research in the policy-making process.
5. The government should support symposia on the topic of migrant labor so that researchers would have the opportunity to present their findings and policy-makers could take them into consideration.